



Dairy Cooling Solutions
A Division of Eurotec Limited

Packo



Cooling technology

tailored to the needs of modern-day dairy farmers



Direct expansion

REM/DX



The elliptical shape of the REM/DX –as featured here with the Dolphin control-considerably enhances the performance of the cooling tank.

An efficient cooling tank must cool milk quickly, agitate the milk volume optimally, and, above all, provide for perfect cleaning and simple maintenance. The **elliptical model** REM/DX direct expansion tank offers all the basic functions that you, as a dairy farmer expect of a modern tank. In addition, the tank's elliptical shape with its laser welded evaporator provides a **bigger cooling surface**, ensuring **more efficient cooling**. This means rapid cooling with lower energy consumption. The Packo Rotojet Cleaning System ensures an exceptionally fast and efficient tank cleaning by means of high-pressure water application. The tanks come with a self-washing milk outlet with road tanker connection NW 50 – 80, SMS 63 – 76 or other.

Capacity: 1,050 to 15,000 Litres

2, 4 & 6 Milkings and AMS milking

LEM/DX & LS/DX



For larger quantities of milk we have developed the LEM/DX and LS/DX range of cylindrical cooling tanks.

The difference between the two types is the diameter. The LS/DX tanks have a larger diameter and are therefore shorter. If the length of the milk house is limited, the LS/DX is an excellent solution.

The laser welded evaporator ensures optimal cooling. The standard LEM/DX & LS/DX tanks come with the integrated **Packo Rotojet Cleaning System**, an 80 mm tank outlet with butterfly valve and a **self-washing milk outlet**.

The choice of options best suited to your needs is entirely up to you:

- **Automatic dosing** of detergents
- **ECO-WASH** short cleaning system
- **Oculus**: independent tank monitoring and registration system
- **Pacap**: digital volume indicator

LEM/DX: Capacity: 18,000 to 32,000 Litres

4 & 6 Milkings and AMS milking

LS/DX: Capacity: 10,250 to 30,450 Litres

6 Milkings and AMS milking



The Packo Rotojet water coupling is integrated into the revolutionary and unique shape of the agitator motor, thus optimising the operational safety of your system.



Packo Rotojet washes mechanically... and is more economical

Unlike standard cleaning systems, the Packo Rotojet uses a **spray ball** built into the agitator blade. Not a drop of milk is missed by the **high-pressure jets** of water coming from the rotojets. The wash system uses one or more spray balls, and automatically adjusts its water and detergent dosage, depending on the tank volume.

The short cleaning system **ECO-WASH** is also available as an option. This system not only saves you time (50%), but also **reduces water consumption** considerably.



Going from small to big without straining your budget

Going from small to big without straining your budget. More and more dairies are requesting larger tank outlets to reduce the amount of time to empty milk cooling tanks on farms. In the future, farmers may be asked to meet this requirement which, in some cases, will result in an expensive adaptation or even the purchase of a new tank.

If you are using a Packo milk cooling tank, all you need to do is to upgrade from the existing milk connection to another one (e.g. NW50 to NW65 or 80).

Other connections such as SMS, RJT or IDF are also possible.

Ice bank system

RM/IB



Ice Bank Cooling System: 40 years of know-how at your service.
The ice water system of the RM/IB cooling tank features a built-in ice bank, ensuring intensive milk cooling without any risk of freezing. The ice bank system sprays ice water across the external surface of the inner tank. This accelerates cooling by 50 % compared to a standard direct expansion system.

Thanks to Packo's high-quality Ice Bank technology (IB), the **cooling time is reduced by half**, with **no risk** of freezing the milk. Cooling with ice water is particularly effective when used with AMS milking. Being the world leader in ice bank systems, Packo has been developing and improving this technology for over 40 years. This system, which was previously considered as a simple variation on the "bain-marie" system, is, nowadays, increasingly applied in the world's leading dairy industries. Its strength goes beyond just maintaining milk quality. The ice bank milk cooling tank will store a reserve of ice, which means that the cooling units don't need to be switched on during milking. **There is less risk of milk temperature increase** due to this ice reserve, even in the event of power fluctuations.

The other advantage is that you don't need to invest in large cooling units, which saves you space and cuts down installation costs. Another added bonus is the fact that you can avail of **cheaper night-rate electricity** to build up your reserve of ice, thereby reducing running costs substantially.

Capacity: 1,600 to 15,400 Litres

2, 4 & 6 Milkings and AMS milking

REM/DIB, LEM/DIB & LS/DIB



Direct Ice-Bank DIB-cooling.
The advantages of the RM/IB cooling tank also apply to the DIB system. This system builds up the ice reserve in a separate ice builder (PIB).

DIB tanks with large laser welded heat exchanger

The ice water, coming from a separate ice builder, flows through this heat exchanger ensuring rapid milk cooling. Ice water cooling has been used for many years in dairy farms and collection centres because it can cool large amounts of milk in a very short time.

Ice water, used in combination with the tubular or plate heat exchanger, brings the milk under the critical temperature of 10 °C before it even reaches the tank. What's more, combining the heat exchanger with well or mains water supply can lead to an energy saving of up to 50 %.

Capacity: 3,800 to 32,000 Litres

2, 4 & 6 Milkings and AMS milking





Options for Automatic Milking Systems

Several options are available to adapt Packo tanks to automatic milking systems. These include a bottom inlet, a three way valve for the connection to the AMS and a pneumatic cylinder for the butterfly valve in the milk outlet. An interface box acts as an interface between milk cooling tank control and AMS.



SSC (Soft Start Cooling)

Whilst ice water cooling is the best system for cooling small quantities of milk (no risk of freezing) Packo also has an optimal solution for Direct Expansion tanks. The optional Packo SSC system, which controls the cooling unit, is a carefree and intelligent system that monitors the pressure and temperature in the evaporator and the quantity of milk in the tank, thus avoiding freezing of the milk.

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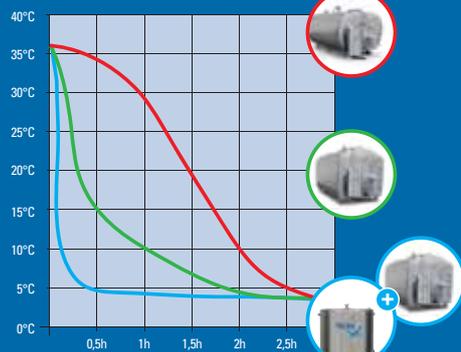
Buffer tank:

The efficiency of an AMS depends on the number of hours it can milk per day. With the Packo buffer tank you can avoid the time loss by filling the buffer tank while emptying and cleaning the milk cooling tank. As soon as the milk cooling tank is cleaned, the AMS starts milking in it again and the milk in the buffer tank is also pumped to this tank.

The Packo buffer tank has a fully independent cleaning system with stainless steel pump and a fixed spray ball. It is cleaned as soon as it is empty.



Three milk cooling systems in a race against time



- Direct expansion DX
- Ice water system IB - DIB
- Instant cooling system with heat-exchanger

Vertical milk cooling tank & Ice Builder

VM/DIB & VM/DX



The Packo vertical milk cooling tank with direct expansion (DX) or ice water (DIB) is an ideal solution when you have shortage of space, much less floor surface is required compared to a large horizontal tank. Avoid building costs and save space by placing your tank outside.

The outer jacket and inner tank are fully made of stainless steel AISI 304. The construction, following industrial standards, ensures an almost unlimited lifespan and a high second hand value. The tank is insulated with PU foam insulation insuring minimum heat losses. In other words, the tank is made to be installed outside where the tank control and the milk truck connection are placed inside the building.

The highest standards regarding food hygiene are respected, this means that there is no risk of contamination. Because of the large tank outlet (80 mm) and the inclined construction of the bottom, the milk is evacuated rapidly but treated very gently without the risk of fat separation.

The efficient Packo cleaning system, with powerful stainless steel pump and two strategically installed spray balls, guarantees that the tank is thoroughly cleaned. The Dolphin tank control with automatic dosing pumps for detergents is standard and gives an accurate concentration of cleaning agents to ensure low consumption.

Capacity: 12,000 to 35,000 Litres

2, 4 & 6 Milkings and AMS milking

PIB

The Packo Ice Builder is the result of many years of experience in cooling liquids for the dairy- and food industry. The PIB is the heart of the DIB system, it builds up an ice reserve with which it can make a large amount of ice water at zero degrees.

The PIB is constructed of thick stainless steel plates (AISI 304) for a long lifetime. Environmental friendly PU-foam is injected between the interior and exterior housing for insulation. The insulation has a thickness of 50 mm to ensure a completely vapour-tight construction. This prevents thermal losses and improves low energy consumption.

The standard PIB is supplied with a powerful pump that transports the ice water (see principal previous page) through the heat exchanger in the DIB tank. A rapid cooling, **without the risk of freezing**, of your valuable milk is ensured. **Bacteria don't stand a chance!**

Possible options include an extra ice water pump for instant cooling and a time clock for the use of **cheaper night-rate electricity**.

Cooling capacity: 8 – 372 kWh





Alcove

An alcove facilitates the installation of the tank. The tank is placed in face of a large opening in the wall. The Dolphin tank control, the bottom filling and the self washing milk outlet with 80 mm butterfly valve and milk tanker connection are mounted on the tank. They can easily be reached from the inside.



Bottom filling

The bottom filling allows the milk to enter the tank very gently, thus avoiding fat separation. A large non return valve prevents the milk to flow back from the tank into the milklime.

With a single action one butterfly valve is closed and the second one is opened. The milk cannot enter the tank anymore and the milklime can be cleaned together with the milking parlour.



PIB evaporator

The evaporator of the PIB is made from seamless copper tubes and mounted in a stainless steel frame, a long lifetime is ensured.

Control units

DOLPHIN



The DOLPHIN control unit is equipped with a large, graphic LCD screen that allows you to simultaneously check the current temperature and functions presently being carried out by the cooling tank. Functions such as cooling, agitating or cleaning are indicated as a pictogram and in plain text. The control unit is very easy to operate because of the very intuitive menu structure. The finger-touch menus lead you through the various "functions step by step", thus eliminating complex parameter settings. The Dolphin is standard on all closed tanks.

DOLPHIN: user friendly tank control

At the slightest irregularity, the Dolphin activates an alarm signal and an indicator lamp lights up. This allows you to intervene immediately and protect the valuable milk in your tank. Optionally, the Dolphin can also forward a message to your mobile phone. Furthermore, the Dolphin is equipped with a fully automatic logbook. This means that you can instantly trace the cause of the error and avoid any milk loss.

Features:

- Large graphic LCD screen
- User and business friendly
- More than 15 languages available
- Fully automatic logging
- Finger-touch menu with easy to use controls
- Continuous, accurate display of each action
- Optional GSM communication

DOLPHIN with ECO-WASH



The ECO-WASH short cleaning system cleans your tank in half the time it would take a standard washing system. This means energy and water savings, and above all time savings. For instance with an Automatic Milking System, the robot(s) can start milking much quicker in the tank which increases your daily production.

The heart of the system is the DOLPHIN tank control with an additional buffer tank of cold water. This tank is automatically filled through a float valve. A water level sensor doesn't allow the pump to start without sufficient hot water ensuring a clean tank and no danger of pump burn-outs!

PCV3

The PCV3 is a modern and very reliable tank control which offers all the basic functions, such as milk temperature control, cooling and cleaning. Its features include user friendly intuitive finger touch buttons, a LED display which shows the actual milk temperature and LED's to indicate the different functions and washing cycles. Errors are also indicated in the display with a code, however, a logging is not foreseen.

With the PCV3, some interesting options, such as automatic dosing pumps and second drain valve, are possible. Other options, e.g. ECO-WASH or AMS functions are not available. In this case, the Dolphin control remains the correct choice.

The PCV3 tank control is optionally available on all closed tank types.



The Oculus milk monitor: independent and reliable

The revolutionary milk monitor, Oculus, controls and registers all the cooling, agitating and cleaning data by means of sensors placed inside the cooling tank. This independent monitoring system, strongly recommended in a number of countries, is an extra guarantee for quality milk.

The system also allows you to download all the relevant data onto your PC in a reliable and user-friendly way. Oculus sends you instant notification whenever the slightest error is detected. What's more, the use of Oculus in combination with the control and monitoring functions of the Dolphin control system ensures watertight monitoring.



- Real indications of what is happening in the tank, no guesswork
- Totally independent from the tank controls
- Visual and sound alarm signals
- Logbook containing all the data on cooling, temperature, cleaning, alarm signals
- Calibration and parameter setting without PC
- Connection to PC possible

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PACAP

You want to know how much milk there is in your tank? Just check the LED display of the digital volume indicator.

The heart of the PACAP is an electronic measurement of the milk level with an accurate float system. This level, measured in millimetres, is translated to litres based on the volume table of the milk cooling tank, therefore it must be calibrated individually.

Your advantage: No more time loss for reading the dipstick.

Energy saving equipment

Tubular cooler

*The Packo tubular cooler is the best solution for pre-cooling the milk!
The milk is pre-cooled very rapidly with well water to a temperature of about 20 °C.
This can lead to an energy saving of up to 50 % when cooling further down to 4 °C.*

Your advantages:

- Free (!) heating of water from milk
- Considerable savings when using well or mains water as pre-cooling
- Easy cleaning, together with the milking machine
- Instant milk cooling slows bacterial growth
- Low blend temperature during subsequent milkings, less chance of bacterial growth
- No seals, the milk is only in contact with stainless steel, avoiding pollution or contamination
- Seamless stainless steel tube-in-tube system, no contamination possible
- The heated water can be used as drinking water for the cattle. The animals like to drink warm water and they drink more. The milk production remains stable, also during wintertime. Tests on the farm have proven this.
- Possible subventions for environment friendly solution
- Smaller cooling unit possible, meaning a smaller investment
- Short return on investment (only a few years)
- Suitable for well water
- Very long life expectancy
- No maintenance costs

Heat recovery

In a dairy farm much hot water is used for the cleaning of the milking machine, the milk cooling tank and the dairy. Also for the preparation of replacement milk for the calves, warm water is required. This is a constant cost factor, year after year.

Heat energy taken out of the milk during cooling disappears into the air if you don't have a recovery system. Which is a pity because you can use this energy in a useful way, save money and contribute to a better environment!

Two systems:

1. **Plate heat exchanger built onto the cooling unit.**
The heated water is collected in a boiler and can be heated up further with gas or electricity to the requested temperature of 80 °C or more.
2. **Double walled heat exchanger integrated in a boiler.**
This vessel is available with a volume of 200, 300, 500, 750 or 1000 litres and can be foreseen with an electrical heating element to heat up the water to the requested temperature of 80 °C.





Energy saving

- | | |
|---------------------|-----------------|
| 1 Milking parlour | 4 Cooling unit |
| 2 Tubular cooler | 5 Heat recovery |
| 3 Milk cooling tank | 6 Cleaning |





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